

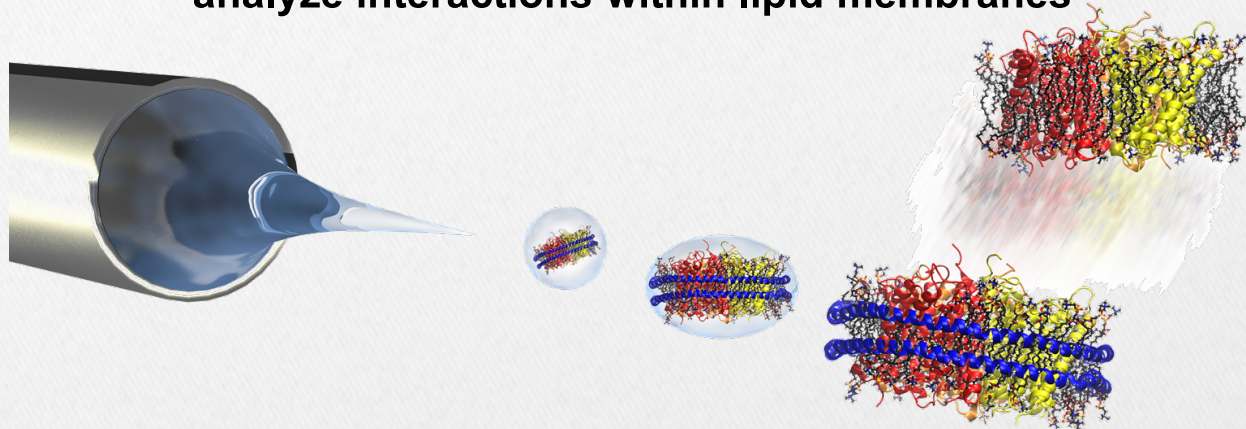
Analytical McElvain Seminar

Thursday, Nov. 15th at 12:15 pm in Room 1315 Chemistry

Prof. Michael Marty

University of Arizona

**Combining native mass spectrometry and nanodiscs to
analyze interactions within lipid membranes**



Membrane proteins play critical biochemical roles, but they remain challenging to analyze, especially within lipid environments. Native mass spectrometry (MS) has emerged as a powerful technique for studying membrane protein oligomeric state and interactions. However, conventional native MS of membrane proteins has relied on detergent micelles, which may distort membrane protein interactions and are unsuitable for assembly of smaller peptide complexes. We are developing nanodiscs as an alternative membrane mimetic for native MS that provides a native-like lipid bilayer environment with a defined lipid composition. We have discovered that chemical reagents that modulate the ionization conditions allow us to preserve the intact nanodisc complex with the membrane protein inside. This novel approach allows us to measure the oligomeric state of membrane protein complexes within the intact nanodisc membrane. We are employing this technique to characterize complexes of membrane proteins, antimicrobial peptides, and membrane active drugs. Ultimately, we expect this unique combination of nanodiscs and native MS will provide new insights into interactions with lipid membranes.

Analytical McElvain Lecture Series